RHIC QLI – Power Supply / Diagnostic Reports for (p^ Run 2001)
December-17 thru December-23

Monday: Dec 17, 2001

The RHIC snake permit link inputs have been enabled by the MCR.

1539: Development off. Both Blue Ring snakes quenched while attempting to start a Blue Ring fill. The BLM's did not pull the permit link.

15:45:16- We had a blue snake quench while filling yellow with 55 ?!Angelika
15:53:27- Blue snake power supplies logging stopped around noon today.

Monday: Dec 17, 2001

QLI in 9C Blue Snake Magnet bi9-snk7-2.3 (Actual Time 15:39:07)
Qdplots indicate Blue Auxiliary 1 quenched.
BMDC =473.4amps, sitting at Injection. BI9-SNK7-2.3 current =326.2amps.
Qdplots: V-tap BI9SNK&_2VT drops negative approximately -0.18sec before T= Zero.
Beam Loss Monitors: N/A
Quench Status: REAL MAGNET QUENCH
Reason: Possible Beam Induced.

QLI in 9C Blue Snake Magnet bi9-snk7-1.4 (Actual Time 15:39:09)
Qdplots indicate Blue Auxiliary 0 quenched.
BMDC =473.4amps, sitting at Injection. BI9-SNK7-1.4 current =100.4amps.
Qdplots: Indicate that both V-taps perturbation -1.84sec caused by bi9-snk7-2.3 quench.
Beam Loss Monitors: N/A
Quench Status: REAL MAGNET QUENCH
Reason: Caused by bi9-snk7-2.3 quenching.

Monday: Dec 17, 2001

QLI in 3C Blue Snake Magnet bo3-snk7-2.3 (Actual Time 15:39:12)
Qdplots indicate Blue Auxiliary 1 quenched.
BMDC =473.4amps, sitting at Injection. BO3-SNK7-2.3 current =325.8amps
Qdplots: V-tap BO3SNK7_3VT goes negative approximately -0.17 sec before T= Zero.
Beam Loss Monitors: N/A
Quench Status: REAL MAGNET QUENCH
Reason: Possible Beam Induced.

QLI in 3C Blue Snake Magnet bo3-snk7-1.4 (Actual Time 15:39:16)
Qdplots indicate Blue Auxiliary 0 quenched.
BMDC =473.4amps, sitting at Injection. BO3-SNK7-1.4 current = 99.7amps
Qdplots: Indicate that both V-taps perturbation -3.7sec caused by bo3-snk7-2.3 quench.
Beam Loss Monitors: N/A
Quench Status: REAL MAGNET QUENCH
Reason: Caused by bo3-snk7-2.3 quench

Tuesday: Dec 18, 2001

(NOTE): Physicists complained that there was a possible problem with the DX magnets moving. Don called George and he looked at slow log and found nothing wrong. Perhaps something else could be the problem? Will look further into it if this continues to be a problem. (SOLUTION): Physicists found out later that the Star Magnet being turned On and Off would disturb the Orbit.

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Wednesday: Dec 19, 2001
A good day for Power Supplies and the Quench System, *Science Advances for another day!*

(For information only):
MCR had some trouble with the cfe-4b-rtdl, a reset would trip us off (QLI) in the past but there was no report of that in any of the log reports or the Quench Summary pages. *MCR Notes:* 1705: Development off. The alarm display is suggesting that we "cannot interact" with cfe-4b-rtdl and that it should be reset. The RHIC magnets were already ramping to park.
1720: Machine Setup. Before preparations could be made to reboot the FEC, the problem cleared on its own.
17:33:04- For about 15 minutes, it appeared that cfe-4b-rtdl was down. We had initiated the ramp back to injection when the "not responding" alarm came in. Before any serious attempt to correct RTDL related problems was made, the FEC was running again. The FEC was not rebooted by the MCR. We will see if we can inject. Jim 1845: The cfe-4b-rtdl alarm reappeared earlier (while ramping down again). Contacting the Controls Group. 1910: A. Marusic is checking 4b-rtdl.
1923: With agreement from the MCR, Al did a soft reboot on 4b-rtdl. This cleared the problem and did not further affect operations.

Thursday: Dec 20, 2001

Maintenance Period ran from 0800 to 1300hrs.

08:15:52- Quench Link Interlock in Blue ring, 4b-time.A dropped first (Maintenance)
08:16:25- Quench Link Interlock in Yellow ring, 4b-time.A dropped first (Maintenance)
(Gregg put two power supplies in the OFF state for the purpose of bringing down the Blue and Yellow Quench Links as per Don Bruno for the start of maintenance).

Thursday: Dec 20, 2001:
Snake Magnet QLI in 3C, Blue bo3-snk7-2.3-ps (Actual Time 09:21:39)
Snapshot Data: Indicated the supply turned off, (Power Supply Link Carrier)
Qdplots indicate BMDC = zero amps. BO3-SNK7-2.3 current =325.90amps.
Beam Loss Monitors: N/A, no data
Quench Status: REAL MAGNET QUENCH
Reason: Power to the Controls Low Res Card Bucket was turned off for repair work performed on Corrector Magnet bo3-th8. (The low res card for bo3-th8 was swapped out) The low res card for bo3-th8 and these two Blue Snake power supplies reside in the same controls bucket and therefore tripped the both blue snake power supplies.

Snake Magnet QLI in 3C, Blue bo3-snk7-1.4-ps (Actual Time 09:21:39)
Snapshot Data: Indicated the supply turned off, (Power Supply Link Carrier)
Qdplots indicate BMDC = zero amps. BO3-SNK7-1.4 current =99.71amps.
Beam Loss Monitors: N/A, no data
Quench Status: REAL MAGNET QUENCH
Reason: Power to the Controls Low Res Card Bucket was turned off for repair work performed on Corrector Magnet bo3-th8. (The low res card for bo3-th8 was swapped out) The low res card for bo3-th8 and these two Blue Snake power supplies reside in the same controls bucket and therefore tripped the both blue snake power supplies.

Other QLI performed during the maintenance period:
12:23:47- Quench Link Interlock in Blue ring, 8b-ps1 dropped first (Maintenance)
12:34:27- Quench Link Interlock in Blue ring, 8b-ps1 dropped first (Maintenance)
12:39:07- Quench Link Interlock in Yellow ring, 10a-ps3.B dropped first (Maintenance)

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Thursday: Dec 20, 2001: Beam Abort 6b-ps1 dropped; QLI in Yellow ring, 6b-ps1 (Actual Time 20:12:28 +3911201)
QPA Faults: none, yellow power supplies off.
QD Alarms: All detectors tripped indicating positive Tq values.
DX Heaters: None appeared to fire but DX 4b and 10a showed insufficient data.
QdRealQuench: None listed.
Postmortems: Ramping, nothing appeared unusual in 1006b and the Mains looked okay.
Qdplots: Ramping to Injection current, trip occurred around -0.084sec before T= zero.
Beam Loss Monitors: Sector 6 looks okay as well as the beam dumps at sector 9 and 10.
Quench Status: Not real.
Reason: Unexplained trip for the moment, will continue to monitor.

From the Physics Logs: Development off. Yellow Quench Link interlock starting from 6b-ps1 while ramping from park to injection. QLI recovery begins.

Thursday: Dec 20, 2001: Beam Abort 4b-time.A dropped; QLI in Yellow ring, 4b-time.A (Actual Time 21:42:32 +3756829)
QPA Faults: Date insufficient, software failure.
QD Alarms: (4b-qd2) Y3QFQ2_VT, Tq -24, all others indicated positive values.
DX Heaters: None fired, data for 4b and 10a not properly displayed.
QdRealQuench: None listed.
Postmortems: Yi3-qf7-ps Iref oscillating and dropped approximately -0.7sec before T= zero causing current fluctuations in power supplies yi3-qf1, yi3-qd2,yi3-qf3, yi3-qd6 and the yellow quad main.
Qdplots: YQMC=449.89amps, YDMC=473.45amps.
Beam Loss Monitors: Sectors 9 and 10 appear normal.
Quench Status: Not real.
Reason: Yi3-qf7-ps tripped the QLI. Possible current regulator card problem (K2 realy). MCR was able to reset and continue. When time is permitted, the card will be replaced.

From the Physics Logs: Setup off. Yellow Quench Link interlock starting from 4b-time.A. A single bunch had been injected into Yellow shortly before.

Friday: Dec 21, 2001
All looks good, no major problems or minor problems to report, *Science Must Continue!!!!*

Saturday: Dec 22, 2001
15:14:41- Beam Abort, 6b-ps1 dropped {Cryo Lead Flow}
15:16 -- The CCR has requested that we ramp to park. The correctors and sextupoles have tripped in 3 o'clock. Cryo personnel will access the ring to reset a PLC. Cryo first attempted to reset a PLC, and then they ended up replacing a power supply for the 3 o'clock temperature rack.

Permit.9c-ps1 Snake 22:06:04 +1669313

Saturday: Dec 22, 2001:

QLI in Alcove 9C; bi9-snk7-2.3-p.s. (Snapshot Data Time: 22:06:05)
Snap Shot: Indicates that the current began to drop off before the Iref.
Qdplots indicate BMDC = 473.44amps sitting at Injection BI9-SNK7-2.3 current =326.18amps
Qdplots V-tap: Magnet qiench did not pull down the Main P.S., BI9SNK7_3VT goes negative approx. -0.199sec, T= zero.
Beam Loss Monitors: ???
Quench Status: REAL MAGNET QUENCH
Reason: ????

QLI in Alcove 9C; bi9-snk7-1.4-p.s. (Snapshot Data Time: 22:06:08)
Snap Shot: Indicates that the Iref dropped before current.
BI9-SNK7-1.4 current =100.23amps
Qdplots Indicate that perturbation took place for both V-taps around -2.446seconds before tripping.
Beam Loss Monitors: ???
Quench Status: REAL MAGNET QUENCH
Reason: Caused by the bi9-snk7-2.3 quench.

Sunday: Dec 23, 2001

-- Sun Dec 23 02:25:08 comment by...Angelika -- **Voltage of yi2-qs3 power supply**. Could this explain the irreproducability?

Permit.9c-ps1 Snake 07:59:24 +2263022

Sunday: Dec 23, 2001:

QLI in Alcove 9C; bi9-snk7-2.3-p.s. (Snapshot Data Time: 07:59:26)
Snap Shot: Indicates that the current began to drop first then Iref.
Qdplots indicate BMDC = 473.44amps sitting at Injection BI9-SNK7-2.3 current =326.47amps
Qdplots V-tap: Magnet quench did not pull down the Main P.S., BI9SNK7_2VT goes negative approx. -0.215sec. T=zero.
Beam Loss Monitors: ???
Quench Status: REAL MAGNET QUENCH
Reason: Possible Beam Induced.

QLI in Alcove 9C; bi9-snk7-1.4-p.s. (Snapshot Data Time: 07:59:28)
Snap Shot: Indicates that the Iref dropped before current.
BI9-SNK7-1.4 current =100.30amps
Qdplots Indicate that perturbation took place for both V-taps around -1.948seconds before tripping.
Beam Loss Monitors: ???
Quench Status: REAL MAGNET QUENCH
Reason: Caused by the bi9-snk7-2.3 quench.

From the MCR Logs: 08:00 Again we encountered numerous injection problems. Just as we were about to fill RHIC, the 9 0'clock Blue snake quenched. Awaiting CCR confirmation to inject beam. H. Huang is here to work on the AGS polarization.

Sunday: Dec 23, 2001

Corrector yi2-qs3-ps problem:

- 12:00:01 comment by...CM, vp -- Skew quad power supply yi2-qs3-ps did not behave properly on the previous (bad) ramp (green line). On this ramp, it was ok (red line).
- 12:06:52 comment by...CM, vp -- We set yi2-qs3-ps to zero, and add it's current setpoint to that of yo1-qs3-ps in order to compensate for this.
- 12:30:36 comment by...vp -- yi2-qs3 has been all over the place (but not on the green line where it supposed to be) starting from ramp 2045 on Saturday 19:09
- 12:35:28 comment by...vp -- Let's note that Angelika saw this problem in the course of the last night work.

Corrector yi3-octd-ps problem:

13:53:43- According to pscompare, all power supplies are ok - except one octupole ps (yi3-octd-ps), which stays at zero. So, what happened to Yellow???

Corrector yi2-qs3-ps problem:

22:08:58 comment by...N.Kling -- yi2-qs3-ps voltage compared to a similar blue supply. This does not look too good.